

Walking-Working Surfaces (Slips, Trips, and Falls)



WALKING-WORKING SURFACES (SLIPS, TRIPS, AND FALLS)

General Requirements

- Housekeeping
- Aisles and Passageways
- Covers and Guardrails
- Floor Loading Protection

Guarding Floor and Wall Openings and Holes

- Definitions
- Protection for Floor Openings
- Protection of Open-Sided Floors, Platforms, and Runways
- Stairway Railings and Guards

Fixed Industrial Stairs

Portable Ladders

Fixed Ladders

Safety Requirements for Scaffolding

Manually Propelled Mobile Ladder Stands and Scaffolds (Towers)

Other Working Surfaces

Reference:

OSHA General Industry Standards, Subpart D, *Walking-Working Surfaces*

WALKING-WORKING SURFACES (SLIPS, TRIPS, AND FALLS)

Slips, trips, and falls constitute the majority of general industry accidents. They cause 15% of all accidental deaths, and are second only to motor vehicles as a cause of fatalities. The OSHA standards for walking and working surfaces apply to all permanent places of employment, except where domestic, mining, or agricultural work only is performed.

GENERAL REQUIREMENTS

Housekeeping

Some of the most frequently overlooked general requirements involve housekeeping:

- All places of employment, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition.
- The floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition. Where wet processes are used, drainage shall be maintained and gratings, mats, or raised platforms shall be provided.
- Every floor, working place and passageway shall be kept free from protruding nails, splinters, holes, or loose boards.

Aisles and Passageways

- Aisles and passageways shall be kept clear and in good repair with no obstruction across or in aisles that could create a hazard.
- Permanent aisles and passageways shall be appropriately marked.
- Where mechanical handling equipment is used, aisles shall be sufficiently wide. Improper aisle widths coupled with poor housekeeping and vehicle traffic can cause injury to employees, damage the equipment and material, and can limit egress in emergencies.

Covers and Guardrails

Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, and the like.

Floor Loading Protection

Load rating limits shall be marked on plates and conspicuously posted. It shall be unlawful to place, or cause, or permit to be placed, on any floor or roof of a building or other structure, a load greater than that for which such floor or roof is approved.

GUARDING FLOOR AND WALL OPENINGS AND HOLES

Floor openings and holes, wall openings and holes, and the open sides of platforms may create hazards. People may fall through the openings or over the sides to the level below. Objects, such as tools or parts, may fall through the holes and strike people or damage machinery on lower levels.

OSHA standards for guarding openings and holes use the following definitions:

Floor hole. An opening measuring less than 12 inches but more than 1 inch in its least dimension, in any floor, platform, pavement or yard, through which materials but not persons may fall.

Floor opening. An opening measuring 12 inches or more in its least dimension, in any floor, platform, pavement, or yard, through which persons may fall.

Platform. A working space for persons, elevated above the surrounding floor or ground.

Wall hole. An opening less than 30 inches but more than 1 inch high, of unrestricted width, in any wall or partition.

Wall opening. An opening at least 30 inches high and 18 inches wide, in any wall or partition, through which persons may fall.

Protection for Floor Openings

Standard railings shall be provided on all exposed sides of a stairway opening, except at the stairway entrance. For infrequently used stairways, where traffic across the opening prevents the use of a fixed standard railing, the guard shall consist of a hinged floor opening cover of standard strength and construction along with removable standard railings on all exposed sides, except at the stairway entrance.

A "standard railing" consists of top rail, mid rail, and posts, and shall have a vertical height of 42 inches nominal from the upper surface of top rail to floor, platform, runway, or ramp level. Nominal height of mid rail is 21 inches.

A "standard toeboard" is 4 inches nominal in vertical height, with not more than ¼-inch clearance above floor level.

Floor openings may be covered rather than guarded with rails. When the floor opening cover is removed, a temporary guardrail shall be in place, or an attendant shall be stationed at the opening to warn personnel.

Every floor hole into which persons can accidentally walk shall be guarded by either:

- A standard railing with toeboard, or
- A floor hole cover of standard strength and construction.

While the cover is not in place, the floor hole shall be constantly attended by someone or shall be protected by a removable standard railing.

Protection of Open-Sided Floors, Platforms, and Runways

One of the most frequently overlooked requirements in walking-working surfaces is the requirement that every open-sided floor or platform 4 feet or more above adjacent floor or ground level shall be guarded by a standard railing on all open sides, except where there is an entrance to a ramp, stairway, or fixed ladder. The railing shall be provided with a toeboard wherever, beneath the open sides:

- Persons can pass,
- There is moving machinery, or
- There is equipment with which falling materials could create a hazard.

Every runway shall be guarded by a standard railing, or the equivalent, on all sides 4 feet or more above floor or ground level. Wherever tools, machine parts, or materials are likely to be used on the runway, a toeboard shall also be provided on each exposed side.

Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment, pickling or galvanizing tanks, degreasing units, and similar hazards shall be guarded with a standard railing and toeboard.

Stairway Railings and Guards

Every flight of stairs with four or more risers shall have standard stair railings or standard handrails as specified below. Stair width is measured clear of all obstructions except handrails.

- On stairways less than 44 inches wide having both sides enclosed, at least one handrail shall be affixed, preferably on the right side descending.
- On stairways less than 44 inches wide with one open side, at least one stair rail shall be affixed on the open side.
- On stairways less than 44 inches wide having both sides open, two stair rails shall be provided, one for each side.
- On stairways more than 44 inches wide, but less than 88 inches, one handrail shall be provided on each enclosed side and one stair rail on each open side.
- On stairways 88 inches or more in width, one handrail shall be provided on each enclosed side, one stair rail on each open side, and one intermediate stair rail placed approximately in the middle of the stairs.

A "standard stair railing" (stair rail) shall be of construction similar to a standard railing, but the vertical height shall be not more than 34 inches nor less than 30 inches from the upper surface of the top rail to the surface of the tread in line with the face of the riser at the forward edge of the tread.

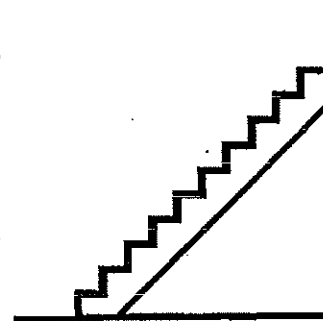
A "standard handrail" consists of a lengthwise member mounted directly on a wall or partition by means of brackets attached to the lower side of the handrail in order to keep a smooth, unobstructed surface along the top and both sides of the handrail. They shall hold the rail 3 inches from the wall and be no more than 8 feet apart.

The height of handrails shall be no more than 34 inches nor less than 30 inches from the upper surface of the handrail to the surface of the tread in line with the face of the riser or to the surface of the ramp.

Winding stairs shall have a handrail that is offset to prevent people from walking on any portion of the treads where the width is less than 6 inches.

FIXED INDUSTRIAL STAIRS

This section contains specifications for the safe design and construction of fixed general industrial stairs. This includes interior and exterior stairs around machinery, tanks, and other equipment, and stairs leading to or from floors, platforms or pits. This section does not apply to stairs used for fire exit purposes, to construction operations, to private residences, or to articulated stairs, such as may be installed on floating roof tanks; the angle of which changes with the rise and fall of the base support.



Where are fixed stairs required?

Fixed Industrial Stairs shall be provided for access to and from places of work where operations necessitate regular travel between levels. OSHA requirements include:

- Fixed industrial stairs shall be strong enough to carry five times the normal anticipated live load.
- At the very minimum, any fixed stairway shall be able to carry safely a moving concentrated load of 1000 pounds.
- All fixed stairways shall have a minimum width of 22 inches.
- Fixed stairs shall be installed at angles to the horizontal of between 30° and 50°.
- Vertical clearance above any stair tread to an overhead obstruction shall be at least 7 feet measured from the leading edge of the tread.

When inspecting the condition of stairways in your place of work, here are some items to watch out for.

- Handrails and Stair rails:
 - A. Lack of
 - B. Placement
 - C. Smoothness of surface
 - D. Strength
 - E. Clearance between rail and wall or other object
- Treads:
 - A. Strength
 - B. Slip resistance
 - C. Dimensions
 - D. Evenness of surface
 - E. Visibility of leading edge
- Improper/inadequate design, construction or location of staircases.
- Wet, slippery, or damaged walking or grasping surfaces.
- Improper illumination...there is no general OSHA standard for illumination levels. The Illuminating Engineering Society publications should be consulted for recommendations.
- Poor housekeeping

The length of a staircase is important. Long flights of steps without landings should be avoided whenever possible.

The OSHA standards do not specify any exact number or placement of landings. The National Safety Council recommends landings at every tenth or twelfth tread.

Intermediate landings and platforms on stairways shall be no less than the stair width and a minimum of 30 inches in length measured in the direction of travel.

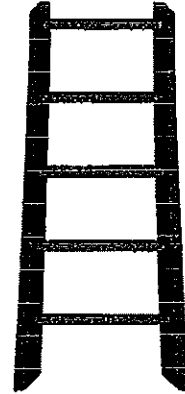
PORTABLE LADDERS

The chief hazard when using a ladder is falling. A poorly designed, maintained, or improperly used ladder may collapse under the load placed upon it and cause the employee to fall.

A ladder is an appliance consisting of two side rails joined at regular intervals by crosspieces on which a person may step to ascend or descend.

The various types of portable ladders include:

- Stepladder - A self-supporting portable ladder, non-adjustable in length, having flat steps and hinged back.
- Single Ladder - A non self-supporting portable ladder, nonadjustable in length, consisting of but one section. Its size is designed by overall length of the side rail.
- Extension Ladder - A non self-supporting portable ladder adjustable in length.



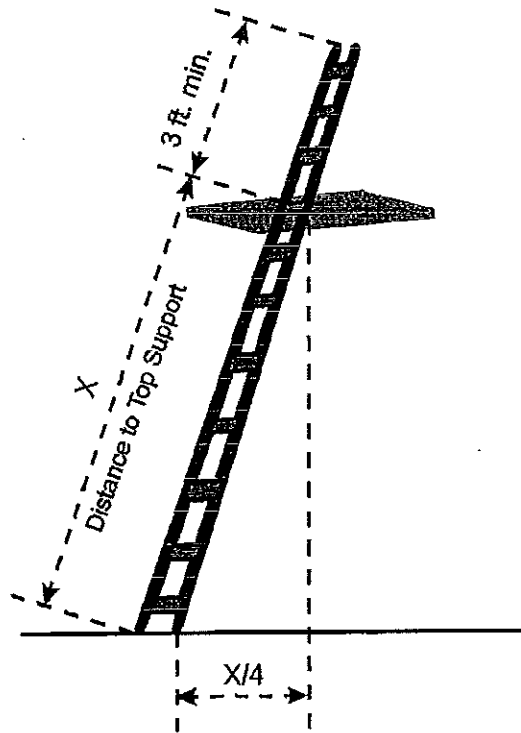
OSHA's requirements for portable ladders include:

- Portable stepladders longer than 20 feet shall not be used.
- Stepladders shall be equipped with a metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in open position.
- Single ladders longer than 30 feet shall not be used.
- Extension ladders longer than 60 feet shall not be used.
- Ladders shall be maintained in good condition at all times.
- Ladders shall be inspected frequently and those which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use."

Proper use of ladders is essential in preventing accidents. Even a good ladder can be a serious safety hazard when used by workers in a dangerous way.

OSHA standards require the following safety precautions for ladder use:

- Ladders shall be placed with a secure footing, or they shall be lashed, or held in position.
- Ladders used to gain access to a roof or other area shall extend at least 3 feet above the point of support.
- The foot of a ladder shall, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one-quarter of the working length of the ladder (the length along the ladder between the foot and the support). See figure above.
- The worker shall always *face* the ladder when climbing up or down.
- Short ladders shall not be spliced together to make long ladders.
- Ladders shall never be used in the horizontal position as scaffolds or work platforms.
- The top of a regular stepladder shall not be used as a step.
- Use both hands when climbing or descending ladders.
- Metal ladders shall never be used near electrical equipment.



FIXED LADDERS

A fixed ladder is a ladder permanently attached to a structure, building or equipment.

A point to remember is that fixed ladders, with a length of more than 20 feet to a maximum unbroken length of 30 feet shall be equipped with cages or a ladder safety device.

A "cage" is a guard that is fastened to the side rails of the fixed ladder or to the structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder.

Cages shall extend a minimum of 42 inches above the top of a landing, unless other acceptable protection is provided.

Cages shall extend down the ladder to a point not less than 7 feet nor more than 8 feet above the base of the ladder.

A ladder safety device is any device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls and may incorporate such features as life belts, friction brakes, and sliding attachments.

Another feature of fixed ladders is the landing platform which provides a means of interrupting a free fall and serves as a resting place during long climbs.

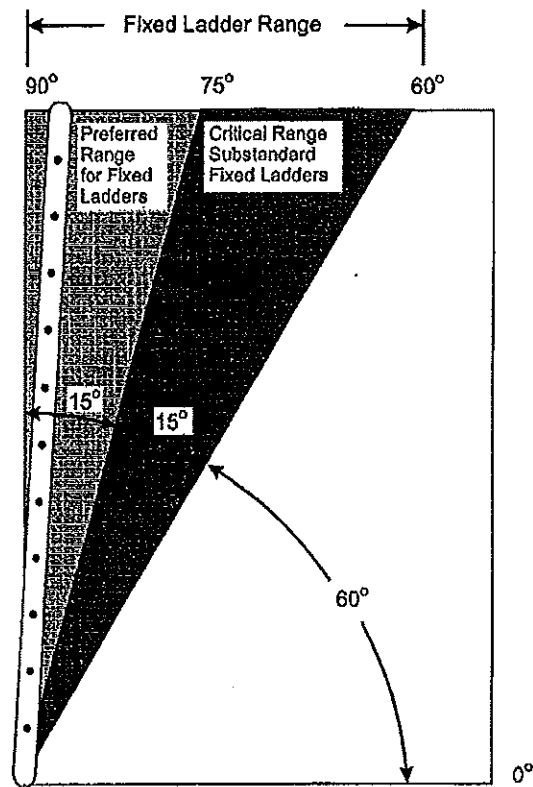
When fixed ladders are used to ascend to heights exceeding 20 feet (except on chimneys), landing platforms shall be provided for each 30 feet of height or fraction thereof, when cages are used, except that, where no cage, well, or ladder safety device is provided, landing platforms shall be provided for each 20 feet of height or fraction thereof.

Ladder safety devices may be used on tower, water tank, and chimney ladders over 20 feet in unbroken length in lieu of cage protection. No landing platform is required in these cases.

The preferred pitch of fixed ladders shall be considered to come in the range of 75 degrees and 90 degrees with the horizontal. Fixed ladders shall be considered to be substandard if they are installed within the pitch range of 60 and 75 degrees with the horizontal. Substandard fixed ladders are permitted only where it is found necessary to meet conditions of installation. This substandard pitch range shall be considered as a critical range to be avoided, if possible.

Ladders having a pitch in excess of 90 degrees with the horizontal are prohibited.

As with all ladders, fixed ladders shall be maintained in a safe condition and inspected regularly.



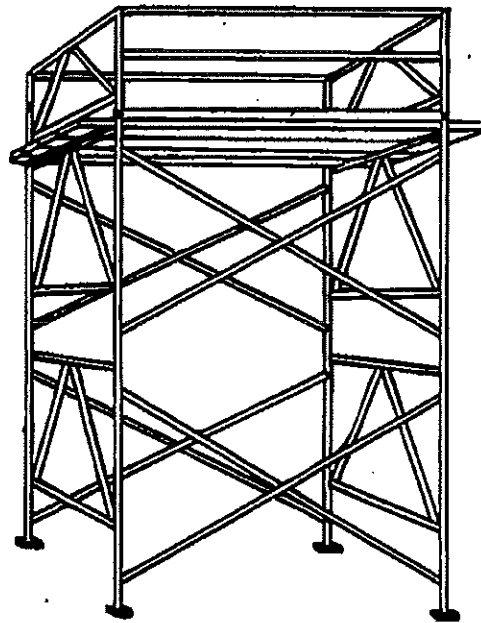
SAFETY REQUIREMENTS FOR SCAFFOLDING

This section establishes safety requirements for the construction, operation, maintenance, and use of scaffolds used in the maintenance of buildings and structures.

There are a number of different types of scaffolds available. No attempt will be made here to deal with every unit individually.

It is important, however, to note some of the general requirements which apply to all scaffolds, namely:

- The footing or anchorage for scaffolds shall be sound, rigid and capable of carrying the maximum intended load without settling or displacement. Unstable objects, such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.
- Scaffolds and their components shall be capable of supporting at least *four times* the maximum intended load.
- Scaffolds shall be maintained in a safe condition and shall not be altered or moved horizontally while they are in use or occupied.
- Damaged or weakened scaffolds shall be immediately repaired and shall not be used until repairs have been completed.
- A safe means must be provided to gain access to the working platform level through the use of a ladder, ramp, etc.
- Overhead protection must be provided for personnel on a scaffold exposed to overhead hazards.
- Guardrails, midrails, and toeboards must be installed on all open sides and ends of platforms more than 10 feet above the ground or floor. Wire mesh must be installed between the toeboard and the guardrail along the entire opening, where persons are required to work or pass under the scaffolds.
- Employees shall not work on scaffolds during storms or high winds or when covered with ice or snow.



As noted earlier, there are a number of scaffold types, and 1910.28 should be reviewed carefully for special requirements that apply to each type.

MANUALLY PROPELLED MOBILE LADDER STANDS AND SCAFFOLDS (TOWERS)

This section contains requirements for the design, construction, and use of mobile work platforms (including ladder stands but not including aerial ladders) and rolling (mobile) scaffolds (towers). As in the previous section, there is a wide variety of materials and design possibilities involved, and no attempt will be made to discuss detailed design criteria at this time.

General requirements include:

- All exposed surfaces of mobile ladder stands and scaffolds shall be free from sharp edges, burrs, or other safety hazards.
- The maximum work height shall not exceed four times the minimum base dimension unless outriggers, guys or braces are added to provide stability.
- This standard requires guardrails and toeboards for work levels 10 feet or more above the ground or floor.

OSHA standard 1910.29 should be reviewed carefully for specific requirements.

OTHER WORKING SURFACES

An important requirement, which can prevent many serious accidents is contained in this section: portable dockboards (bridge plates) shall be secured in position, either by being anchored or equipped with devices which will prevent their slipping. Movement of the dockboard during material handling operations has resulted in forklifts overturning, or falling off the dock, often with serious injury or death to the driver and damage to equipment and material.

A major contribution to accident experience comes from material handling. Handholds shall be provided on portable dockboards to permit safe handling when the dockboard must be repositioned or relocated.

Same Level

The terms slips, trips, and falls are commonly grouped into a single expression. However, in this section we will focus on the first two terms, slips and trips, and more specifically, slips and trips on the same level. Although falls are certainly a result, this module will primarily concentrate on causes of slips and trips and identify administrative controls to abate or minimize these types of mishaps. Statistics show that a majority of falls occur on the same level. Falls, specifically on different levels, will be addressed in following discussions.

In general, slips and trips occur due to loss of traction between the shoe and the walking surface or an inadvertent contact with a fixed or moveable object. Conditions and situations that set the stage for slips and falls are:

- housekeeping;
- wet or slippery surfaces;
- obstacles in walkways;
- lighting;
- footwear; and,
- individual behavior.

Housekeeping

Good housekeeping is paramount. If good housekeeping practices are not enforced, other administrative control measures implemented will never be fully effective.

It has often been said that safety and housekeeping go hand in hand. This is extremely true, especially when addressing the serious issue of slips, trips, and falls. If your facility's housekeeping habits are poor, the result may well be employee injuries, ever increasing insurance costs, and regulatory citations. If an organization's facilities are noticeably clean and well organized, it is a good indication that its overall safety program is effective as well. In addition to safety, disorderly work environments can negatively impact the morale of employees who must function in a job site that is dirty, hazardous, and poorly managed.

Obviously housekeeping is not the "minor" issue many people suppose it to be.

According to the National Safety Council, workers are injured from slips, trips, and falls more than any other occupational injury. These can often be avoided if proper housekeeping procedures are used. It is not uncommon for a worker to trip on a piece of equipment or tool that they themselves forgot to put away.

Good housekeeping includes picking up, wiping up, and cleaning up.

It includes the prompt removal of scrap and waste. It is reflected in the old adage of "having a place for everything and putting everything in its place." Sometimes housekeeping is delegated to janitorial services. However, like "safety" itself, housekeeping is everyone's responsibility.

Proper housekeeping is a routine. It is an ongoing procedure that is simply done as a part of each worker's daily performance. When each individual does his/her part to keep work areas clean, then a successful housekeeping program will be the result.

Every workplace is subject to either good or bad housekeeping. Factories, warehouses, laboratories, kitchens, hospitals, and offices ... the list is endless. In all of these diverse areas good housekeeping can be



achieved by establishing a simple three step program.

1. Plan Ahead – Know what needs to be done, who's going to do it, and what the work area should look like when you're done.
2. Assign Responsibilities – If necessary, a person should be specifically assigned to clean up (although personal responsibility for cleaning up after him/herself is preferred).
3. Implement a Program – Establish housekeeping as a part of the daily routine (an ongoing procedure).

Some specific reference materials that may be useful in helping an organization evaluate its housekeeping efforts and/or develop an effective program can be found at the websites listed below. Keep in mind that good guidelines for all operations can be obtained from reviewing these sites.

Laboratory Operations -- University of Washington
www.ehs.washington.edu/ohsreslab/housekeeping.shtm

Toolbox Topics: Housekeeping -- Virginia Polytechnic Institute and State University
www.ehss.vt.edu/detail_pages/document_details.php?document_id=283

Construction and Hazardous Chemicals -- Canadian Centre for Occupational Health and Safety
www.ccohs.ca/oshanswers/hsprograms/cklstcon.html

PowerPoint Presentation on Housekeeping and Fire Safety -- Iowa State University
www.ehs.iastate.edu/publications/ebooks/fireprevention.ppt

OSHA's Housekeeping Regulation
[29 CFR 1910.22\(a\)](http://www.osha-slc.gov/SLC/OSHA-ASST/OSHA-ASST.nsf/0/29CFR1910.22(a))

<< [back to top](#) >>

Wet or Slippery Surfaces

Slips and trips on walking surfaces are a significant portion of injuries reported by covered state agencies. The specific types of surfaces involved in these injuries vary considerably, but some of the more frequently reported are:

- parking lots;
- sidewalks (or lack of);
- food preparation areas and shower stalls in residential dorms; and,
- floors in general.

Traction on outdoor surfaces can change drastically when subjected to environmental factors such as rain or sleet or on indoor surfaces when moisture is tracked in by pedestrian traffic. Some administrative controls that can be implemented outdoors include the following.

- Keep areas, such as the parking lots and sidewalks, clean and in good repair condition.
- If snow or ice are a factor, additional controls can be implemented to either remove the snow where feasible or, in the case of ice, to treat the surface with sand or other environmentally friendly material. If surfaces are sloped, an additional precaution may be to temporarily suspend use of the area.
- Use adhesive stripping material or anti-skid paint wherever possible.

A wide variety of surfaces are available indoors. Although most provide some degree of slip resistance in their original state, there are some exceptions. Highly polished floors such as marble, terrazzo, or ceramic tile can be extremely slippery even when dry and definitely increases the potential for a slip when moisture is present. Other types of floors may not have the built-in hazard such as the decorative ones mentioned, but they present a hazard especially in the presence of moisture, liquid spills, or food. Some agencies have additional unique exposures in this area, such as those with food services departments and bathing facilities for residential care workers.

Control measures that can be implemented indoors to prevent, or minimize as much as possible, injuries caused by wet surfaces include the following.

- Anti-skid adhesive tape is an excellent and economically feasible fix to combat slips or trips.
- During inclement weather conditions, moisture-absorbent mats should be placed in entrance areas. Caution: Improper mats can become tripping hazards themselves. Floor mats should have beveled edges, lie flat on the floor, and be made out of material or contain a backing that will not slide on the floor.
- Have readily available and display wet floor signs. An additional caution: A wet floor sign is a valuable tool to attract attention, but should not in of itself be a sole control technique. It is also important that once the hazard is removed the sign is also removed. Otherwise, they become commonplace and lose their intended effectiveness.
- Have a policy or procedure implemented articulating the appropriate action to be taken when someone causes or comes across a food or liquid spill.
- Proper area rugs or mats should be used in food preparation areas or bathing facilities. A more expensive, however effective, measure in these particular areas is chemical treatment of the floor surface, which increases the coefficient of friction when moisture is present.
- Where wet processes are used, maintain adequate drainage, mats, and false floors wherever possible.

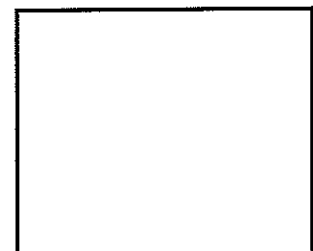


[<< back to top >>](#)

Obstacles in Walkways

Injuries can also result from trips caused by reasons other than slippery surfaces, namely inadvertent contact with obstacles or other types of material (debris) and/or equipment. For example, obstacles could include obstructions across hallways, material stacked or dumped in passageways, clutter, and the list can go on. Of course proper housekeeping in work and walking areas is still the most effective control measure in avoiding these types of hazards. This means having policies or procedures in place and allowing time for cleaning the area, especially where scrap material or waste is a by-product of the work operation. Keep aisles and corridors clean, clear, and in good repair to the maximum extent possible. This is especially true in office environment swhere there is a common tendency to store or stack material, especially boxes, in hallways and corridors. Not only is this an unsafe practice conducive to a tripping hazard but also a source of fuel in the event of a fire. The following are some control measures that can be implemented.

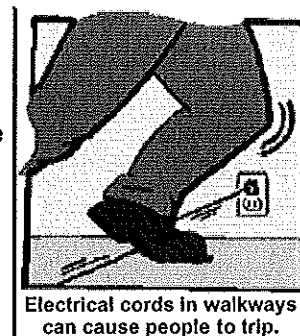
- Insist on good housekeeping and keep all work areas, passageways, storerooms, and service areas clean and orderly.
- Where mechanical handling devices are used, such as storage areas or warehouses, allow sufficient clearance for maneuvering of the equipment. In highly congested or trafficked areas provide separate and marked permanent aisles and passageways for both equipment and pedestrian traffic.
- Avoid stringing cords or lines across hallways or in any walkway. If it is necessary to do so, it should be on a temporary basis (i.e., power cords,



telephone lines, etc.) and, then the item should be taped down.

- In the office environment, emphasize caution on where people leave carrying items such as briefcases, boxes, etc.
- Encourage safe work practices such as closing file cabinet drawers after use and pick up and stow loose items from the floor.
- Maintain constant vigilance for slip and trip hazards through periodic inspections.

<< [back to top](#) >>



Lighting

Maintain Proper Lighting

Inadequate lighting can hide items that are in your way, so replace light fixtures or bulbs that don't work. Keep work areas well lit and clean. When you enter a darkened room, always turn on the light first, even if you stay only for a minute. Keep walkways clear of obstructions, especially in areas with poor lighting. Have accessible light switches and a handy place where a flashlight can be found. Motion-sensitive lights can improve safety and energy as well. Repair fixtures and cords immediately if they malfunction -- don't wait until someone trips and falls in a darkened room. Move slowly where light is dim. Store items a safe distance from light bulbs. Towels or paper can catch fire from a bulb that's been left on. Proper lighting will ensure that employees detect obstructions and avoid slippery areas. Use proper illumination in walkways, staircases, hallways, and basements to help people avoid slips, trips, and falls. Do not ignore flickering lights, blown fuses or sparks. Have a qualified electrician check the wiring. Don't overload outlets or use extension cords without inspecting them first. Also, check for frays and cracks and note the cord's limit.

Wattage

Burning a 100-watt bulb in a lamp designed for 60 watts is a fire hazard. Most lamps have wattage instructions written along the socket. Use cords with caution. Extension cords are meant for temporary use and should not be used to plug more items into a single outlet. If you have cords running throughout the facility, have an electrician install additional outlets.

Safety

Poor lighting in the workplace is associated with an increase in accidents. Direct and reflected glares and shadows, as well as delayed eye adaption when moving from a bright area into a dark one, may prevent an employee from seeing tripping and other similar hazards. It is certainly important to maintain consistent lighting in emergency evacuation routing and to check these systems on a regular basis.

There are a number of measures that can be used to prevent and control poor lighting conditions in the work environment.

- Task lamps are effective in supplementing general office lighting for those who require or prefer additional lighting. Some task lamps permit several light levels.
- Diffuse light to help reduce shadows. Indirect lighting and task lighting are recommended, especially when work spaces are separated by dividers.
- Adjustable shades should be used if workers face a window.
- Whenever possible, office workers should not face windows, unshielded lamps, or other sources of glare.
- A light-colored matte finish on walls, ceilings, and floors to reduce glare is recommended by the Illuminating Engineering Society.

- Regular maintenance of the lighting system should be carried out to clean or replace old bulbs and faulty lamp circuits.
- Ensure proper light in an office setting (28-50 foot candles where VDTs are being used).

Occupational Safety and Health Administration 29 CFR 1926.56

1926.56 (a)

"General. Construction areas, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to not less than the minimum illumination intensities listed in table D-3 while any work is in progress:"

Table D-3 - Minimum Illumination Intensities in Foot-Candles

| Foot-Candles | Area of Operation |
|--------------|--|
| 5 | General construction area lighting |
| 3 | General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas |
| 5 | Indoors: warehouses, corridors, hallways, and exit ways |
| 5 | Tunnels, shafts, and general underground work areas (exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading) |
| 10 | General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls, and indoor toilets and workrooms) |
| 30 | First aid stations, infirmaries, and offices. |

OSHA site for table D-3

[www.osha-slc.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10630&p_text_version=FALSE#1926.56\(a\)](http://www.osha-slc.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10630&p_text_version=FALSE#1926.56(a))

Additional Site

American National Standards Institute

www.nssn.org/search.html

<< [back to top](#) >>

Footwear

Falls can be prevented. All we have to do is follow one simple rule: watch where we are going. Walking is such a common activity that most of us pay little attention to potential hazards. We need to take the time to pay attention to the more common fall hazards cited by the National Safety Council:

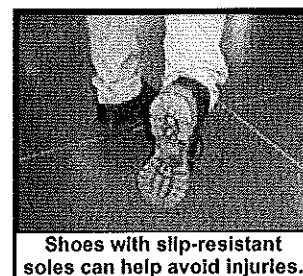
- hidden steps;

- loose, irregular surfaces;
- smooth surfaces;
- wet spots; and,
- oil and grease .

The shoes we wear can play a big part in preventing falls. The slickness of the soles and the type of heels worn need to be evaluated to avoid slips, trips, and falls. Whenever a fall-related injury is investigated, the footwear needs to be evaluated to see if it contributed to the incident. When employees are exposed to hazardous environments that could cause foot injuries, or where there is a danger of falling or electrical hazards or objects piercing the sole, employees are required to wear protective footwear. (OSHA standard 29 CFR 1910.136)

Types of Safety Shoes

- Safety shoes with slip-resistant soles
- Steel toe or soft toe
- Insulated (for electrical shock)
- Waterproof
- Double density polyurethane soles
- Static dissipative
- Metatarsal Guard (top of foot, between the ankle and toes)
- Puncture resistant
- Electrical hazard
- Tech toe (non-metallic protective toe cap)
- Logger boots
- Safety athletic footwear
- Flexible steel midsole



Protective footwear is required to prevent injury from falling, against crushing by rolling objects, or against lacerations from sharp edges, and electrical hazards. In wet-process areas, non-skid footwear is required. Employees are expected to wear footwear appropriate for the duties of their employment. Sandals or other open-toe style shoes are not permitted to be worn in shop areas or other job locations where glass, caustic or corrosive chemicals, or hot materials are used or handled. Safety shoes are required for employees whose routine job duties include the lifting, carrying, or moving, etc., of objects weighing more than 15 pounds, which if dropped, would likely result in foot or toe injury. Examples of job classifications likely to require safety shoes or boots include, but not limited to, carpenters, welders, electricians, plumbers, maintenance mechanics, laborers, grounds workers operating power machinery or tools, and power plant maintenance workers.

State agencies can also refer to the Risk Management for Texas State Agencies guidelines (RMTSA Vol. III Section Two Chapter 7, Subchapter 7.18).

What Should I Know About Safety Footwear?

- Safety footwear is designed to protect feet against the most common types of injuries, impact, compression, and puncture.
- Choose footwear according to the hazard.
- Ensure that it has the proper rating for the hazard and proper sole for the working conditions.
- If foot protection is required, set up a complete foot safety protection program including selection, fit testing, training, maintenance, and inspection.

What Should I Know About the Fit and Care of Safety Footwear?

- Walk in new footwear to ensure it is comfortable.
- Make allowances for extra socks or special arch supports when buying boots or safety shoes.
- Boots should have ample toe room (toes should be about 12.5 mm from the front).
- Boots should fit snugly around the heel and ankle when laced.
- Lace boots fully. High-cut boots provide support against ankle injury.

Care

- Use protective coating to make footwear water-resistant.
- Inspect footwear regularly for damage.
- Repair or replace worn or defective footwear.
- Electric shock resistance of footwear is greatly reduced by wet conditions and with wear.

Additional information can be found at the American National Standards Institute.

Safety footwear should comply with ANSI Z41-1991 "American National Standard for Personal Protection-Protective Footwear."

<< [back to top](#) >>

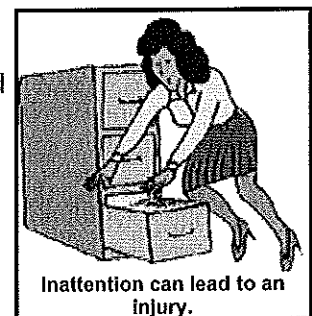
Individual Behavior

Do people normally get hurt because they have a flagrant disregard for safety regulations and procedures? Studies show that this normally isn't the case. In most instances it isn't a person's indifference to proper procedures and precautions that results in injury. The actual cause frequently turns out to be a brief moment of inattention that ends in disaster. Inattention can be identified as the root cause of injury in most every category of accident analysis (traffic mishaps, power tool injuries, aggression incidents, etc.). Within the realm of slips, trips, and falls, inattention can lead to a variety of regrettable events ranging from a simple bruised shin to extremely serious consequences such as concussions or even death.

How many times have we heard the phrase, "I guess I just wasn't thinking" during an accident investigation? What is it that takes a person's attention away from the task at hand? A conversation? Preplanning the next job? Thinking about a personal problem or activity? Whatever the cause, something has taken a person's focus away from his/her current activity to a "mental playground."

Take this "Inattention Test." Do you:

- Get bored easily?
- Lose track of conversations (having to ask, "What were you saying?")?
- Suddenly return to reality (after driving past your exit on the freeway)?
- Know your job so well you could "... do it with my eyes closed?"
- Daydream?



These examples (and many others) would show potential for inattention. A person's state of mind is his/her own personal property and, of course, cannot be controlled by a boss or the workplace. As a result, the supervisor, manager, or individual must frequently emphasize to the workforce or his/herself the consequences a loss of focus could cause.

To help avoid the pitfalls inattention plays in slip, trip, and fall injuries, perform these mental, wake-up exercises. Concentrate on ways to do your job better, or safer, or more efficiently. Take micro-breaks by standing, flexing, or stretching to stimulate the mind and body. Pause and evaluate what has just occurred and review what is about to happen. Remain focused on your hand and foot positions. Check your balance and surroundings. Remind yourself what the costs of inattention could be.

By not staying alert, individuals lose site of what they are doing and are not aware of hazardous floor conditions and surrounding. Additionally, lack of planning is also a significant factor, in that, it is so easy to procrastinate and get behind and then to make up for loss time through speed. Being in a hurry will result in walking too fast, even running, or focused on a task at hand and completely oblivious to the surrounding. This can require rapid changes in direction of travel and often a loss of balance. Distraction, not watching where one is going, carrying materials which obstruct vision, and speed are common elements in many on-the-job injuries.

Remember, you can be extremely careful for years only to get hurt in two seconds of inattention, distraction, or hurrying to get the job done. Instruction, training, and constant reminders can only go so far. It is ultimately up to each individual to:

- plan;
- stay alert; and,
- PAY ATTENTION.

Different Level

As statistics show, falls from elevated surfaces are generally less frequent but, in most cases, more severe than same-level falls, such as slips and trips, in the workplace. More so, the degree of elevation varies considerably, ranging from simply uneven surfaces such as sidewalks to working on elevated platforms such as docks and ramps.

- Uneven surfaces
- Stairs
- Ladders
- Docks/ramps
- Powered industrial lifts

Uneven Surfaces

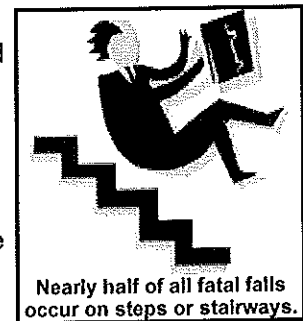
Injuries from falls reported by covered state agencies cover the entire spectrum; however, interesting to note, a majority of these occur on walking and working surfaces that are not necessarily of any significant height. For example, a number of injuries have been reported involving stepping off the edge of a curb or sidewalk to stepping into animal holes by those agencies in the suburbs and outlining areas. For an overview of the various types of surfaces and surrounding terrain that are potential fall hazards, visit the [Social Planning Council for the North Okanagan website](#).

<< [back to top](#) >>

Stairs

As we have seen, falls are the second leading cause of accidental deaths in the United States. Of these fatal falls, statistics show that nearly half occur on steps and stairways.

Steps and stairways can be found in various dimensions and numerous locations. Stairways are constructed out of many common building materials (metal, wood, concrete, etc.) and used to permit transit from one level or floor to another in applications too numerous to detail here. In the home or the office, at the mall or the factory, indoors or out, the act of climbing or descending a stairway will occur many times each day.



Naturally, to prevent a stairway fall, awareness and prevention remain the keys. Before setting foot on a stairway, the following preventative measures should be physically in place or consciously in your mind.

- Whether going up or down stairs, always use the handrail.
- Seeing where you are going is important. Make sure the stairs are well lit with on/off switches at the top and bottom of the stairwell.
- Make sure the stairs are clear and free of all obstacles. Never use a stairway for temporary storage.
- Routinely check the stairs for worn or loose carpeting and immediately make any necessary repairs. If the steps have a smooth surface, install anti-slip tread to provide traction for secure footing.
- Make sure that the edge of each stair is noticeable. If the stairs are carpeted with a material that has a busy pattern, the edge of a stair may not be obvious.
- To avoid confusing the bottom basement step with the floor (a common occurrence), paint it white to make it more visible.

- Take extra care when ascending/descending steps while wearing footwear such as high heels, sandals, slippers, athletic shoes, or socks.
- Avoid carrying vision-blocking loads. Don't carry so much up or down stairs that you can't see where you are stepping. Also, keep one hand free to hold onto the handrail. If necessary, make several trips with smaller loads.
- If throw rugs must be positioned at the top or bottom of a stairway, make sure they are securely fastened with skid-resistant backing and carpet tape.
- Be on guard for single steps when entering or exiting a room. Sudden level changes can be hazardous. Highlight these single steps whenever possible.

In addition to the preventative measures outlined above, steps and stairways located outside must be kept free of ice, snow, or water puddles. Keep in mind that the chances of falling on stairways can be increased by inattention, illness, fatigue, haste, and the use of alcohol or drugs.

The Occupational Safety and Health Administration (OSHA) have developed excellent guidelines for stairway construction, maintenance, and safety in industrial applications.

These guidelines can be found at:

OSHA 29 CFR 1910.21(b)(8) – General Descriptions and Definitions

[www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9713&p_text_version=FALSE#1910.21\(b\)\(8\)](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9713&p_text_version=FALSE#1910.21(b)(8))
and...

OSHA 29 CFR 1910.24 – Fixed Industrial Stairs

www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9716&p_text_version=FALSE
and...

OSHA 29 CFR 1926.1052 – Construction

www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10838&p_text_version=FALSE

Stairway safety reference materials and "hot links" that may be of use to risk managers, industrial safety officers, or homeowners are listed below.

Technical Description of Stair Dimensions and Requirements -- Virginia Polytechnic Institute and State University

www.ehss.vt.edu/Programs/OSD/IM&CHB/31_Stairs.htm

A Workplace Self-Inspection Checklist -- Cornell Laboratory Safety

www.ehs.cornell.edu/lrs/inspections_old/checklists/SI.Stairs.htm

<< [back to top](#) >>

Ladders

There are inherent hazards associated with ladder use. Typical ladder hazards include:

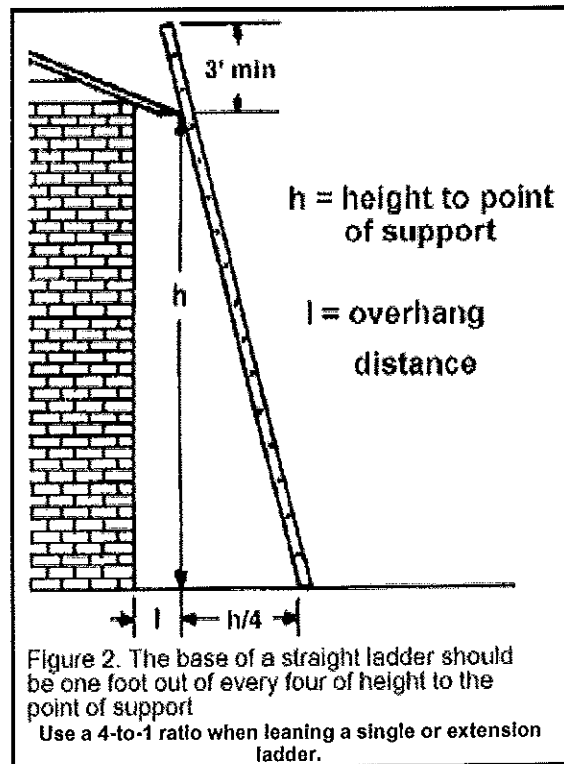
- Ladder structural failure or deteriorated ladders;
- Ladders tipping sideways, backwards, or slipping out at the bottom;
- Ladder spreaders not fully opened and locked, causing the ladder to "walk", twist, or close up when a load is applied to the ladder;
- Using metal ladders around electricity;
- Using fixed ladders without cages or fall protection; and,
- Insufficient surface resistance on ladder rungs and steps.

Employees should follow certain rules when placing, ascending, and descending ladders, which include the following.

- Hold on with both hands when going up or down. If material must be handled, raise or lower it with a rope either before going down or after climbing to the desired level.
- Keep all types of ladders at least 10 feet away from live overhead power lines. Aluminum and even wet or dirty wood or fiberglass ladders can conduct electricity.
- Set step stool or ladder on firm, level ground. Always face the ladder when ascending or descending.
- Never slide down a ladder.
- Be sure shoes are not greasy, muddy, or slippery before climbing.
- Do not climb higher than the third rung from the top on straight or extension ladder, or the second tread from the top on stepladders.
- Carry tools on a tool belt, not in the hand.
- Never lean too far to the sides. Keep your belt buckle within the side rails.
- Choose the right ladder length for the job.
- Keep the area around the top and bottom of a ladder clear. In passageways, doorways, or where traffic or other activities can occur, secure the ladder and block off the area.
- Do not set a stool or ladder on any other object, such as tables, boxes, or scaffolding.
- Do not tie ladders together, unless they are made to be used that way.
- Do not use a ladder when it is windy.
- Never move a ladder while someone is on it.
- Never leave an unsecured ladder set-up unattended.

Other recommended general practices include the following.

- Use a 4-to-1 ratio when leaning a single or extension ladder (e.g. place a 12-foot ladder so that the bottom is 3 feet away from the object the ladder is leaning against).
- Inspect ladder for defects before using.
- Never use a defective ladder. Tag or mark it so that it will be repaired or destroyed.
- Never splice or lash a short ladder together.
- Never use makeshift ladders, such as cleats fastened across a single rail.
- Be sure that a stepladder is fully open and the metal spreader locked before starting to climb.
- Keep ladders clean and free from dirt and grease.
- Never use ladders during a strong wind except in an emergency and then only when they are securely fastened.
- Never leave placed ladders unattended.
- Never use ladders as guys, braces, or skids, or for any other purpose other than their intended purposes.
- Never attempt to adjust a ladder while a user is standing on the ladder.
- Never jump from a ladder. Always dismount from the bottom rung.



Safety devices are available for both portable and fixed ladders to prevent a climber from falling. Safety devices for portable ladders include slip-resistant bases, safety tops, and any other device to increase the ladder stability. A portable ladder positioned at a location where it may be tipped over by work activities should be securely fastened at the bottom and top. Safety devices for fixed ladders include cages (which

enclose the stairwell) or a restraint belt attached to a sliding fixture anchored to the ladder.

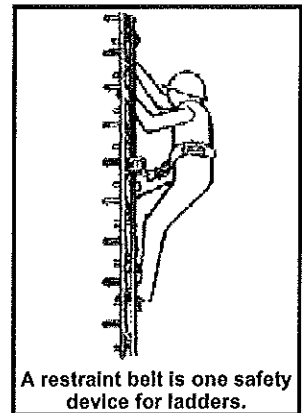
Ladders that are weak, improperly repaired, damaged, have missing rungs, or appear unsafe should be removed from the job or site for repair or disposal. Before discarding a wood ladder, cut it up so no one can use it again.

Additionally, portable ladders must be maintained in good condition at all times and inspected frequently. Tag any ladders that have developed defects with "DANGEROUS -- DO NOT USE" and remove from service for repair or disposal.

For portable wood ladders, all wood parts should be free from sharp edges and splinters, sound, and free from accepted visual inspection from shake, wane, compression failures, decay, or other irregularities.

For portable metal ladders, the design should be without structural defects or accident hazards such as sharp edges, burrs, etc. The selected metal should be of sufficient strength to meet the test requirements and should be protected against corrosion.

Portable wood ladders may be coated with a water-repellent preservative to provide a suitable protective material. Metal ladders and metal parts on wood ladders should be corrosion-resistant and kept free from nicks. If nicks occur, they should be promptly treated to prevent possible metal fatigue due to rust.



Standards for Manufactured Portable Ladders

Portable manufactured ladders obtained after Jan. 21, 1998, should bear identification indicating they meet the appropriate ladder construction requirements of the following standards:

Per OSHA Standard 29 CFR 1910.21:

ANSI A14.1-1990 Safety Requirements for Portable Wood Ladders

ANSI A14.2-1990 Safety Requirements for Portable Metal Ladders

ANSI A14.5-1992 Safety Requirements for Portable Reinforced Plastic and Fiberglass Ladders

ANSI A14.3-1990 Safety Requirements for Fixed Ladders

For Further Information, Visit the Following Websites:

- www.rtc4safety.com/ladder_safety.htm;
- www.cdc.gov/niosh/elcosh/docs/d0100/d000170/d000170.html;
- www.elcosh.org;
- www.ccohs.ca/headlines/text31.html; and,
- www.osha.gov.

For fixed ladders, all wood parts shall meet the criteria of wood ladders. All metal parts shall meet the criteria of metal ladders.

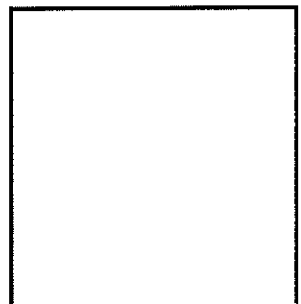
What You Should Know When Climbing a Fixed Ladder

Wait until the other person has exited before ascending or descending.

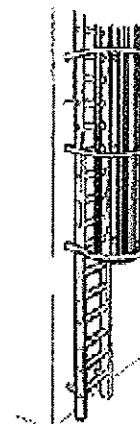
Use the appropriate safety devices (e.g. restraint belt, traveling fixture).

Maintain three-point contact by keeping two hands and one foot on the ladder always.

The proper way to store ladders is:



- Keep wooden ladders in a well-ventilated location, away from dampness and excess heat.
- Tie ladders to support point to reduce damage.
- Support ladders horizontally on racks. To prevent sagging, support ladders every six feet.
- Do not hang from rails or rungs.
- Do not store materials on ladders.
- Do not expose fiberglass ladders to excessive temperatures (above 200 degrees).
- Do not expose plastic-reinforced ladder to excessive sunlight. Ultraviolet light may cause the plastic resins to degrade.
- Ensure that storage areas are easy to reach.



A cage on a fixed ladder can help prevent falls.

Ladder Check List

Condition OK

Needs Repair

General Items to be Checked

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Loose steps or rungs |
| <input type="checkbox"/> | <input type="checkbox"/> | Loose nails, screws, bolts, or other metal parts |
| <input type="checkbox"/> | <input type="checkbox"/> | Cracked, split, or broken uprights, braces, steps, or rungs |
| <input type="checkbox"/> | <input type="checkbox"/> | Damaged or worn non-slip bases |
| <input type="checkbox"/> | <input type="checkbox"/> | Rusted or corroded spots |

Stepladders

- | | | |
|--------------------------|--------------------------|--------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Wobbly (from side strain) |
| <input type="checkbox"/> | <input type="checkbox"/> | Loose or bent hinge spreaders |
| <input type="checkbox"/> | <input type="checkbox"/> | Stop on hinge spreaders broken |
| <input type="checkbox"/> | <input type="checkbox"/> | Broken, split, or worn steps |
| <input type="checkbox"/> | <input type="checkbox"/> | Loose hinges |

Fixed Ladders

- | | | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Loose, worn, or damaged rungs or side rails |
| <input type="checkbox"/> | <input type="checkbox"/> | Damaged or corroded parts of cage |
| <input type="checkbox"/> | <input type="checkbox"/> | Corroded bolts and rivet heads on inside of metal stacks |
| <input type="checkbox"/> | <input type="checkbox"/> | Damaged or corroded handrails or brackets on platforms |
| <input type="checkbox"/> | <input type="checkbox"/> | Weakened or damaged rungs on brick or concrete slabs |
| <input type="checkbox"/> | <input type="checkbox"/> | Base of ladder obstructed |

[download the Ladder Check List \(pdf\)](#)

<< [back to top](#) >>

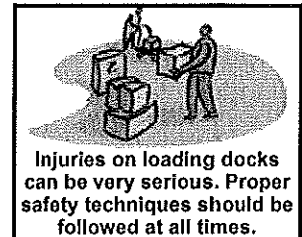
Docks and Ramps

The biggest reason to put a priority on dock safety is not so much related to the frequency of accidents in the dock areas as it is to the potential severity of injuries that can occur in these types of accidents. Injuries sustained when pedestrians are impacted by a lift truck, falling loads, or tractor-trailer tend to be very serious

and even fatal. Prevention of these types of accidents can be achieved through proper equipment, training, and enforcement of safe operating procedures.

When people think of dock safety one of the first things that come to mind is the wheel chock. This is a wedge-shaped block placed in front of the rear wheel of a trailer to prevent the trailer from moving away from the dock while the trailer is being loaded. OSHA regulations require the use of wheel chocks or other vehicle restraining devices when loading and unloading trucks and trailers. This keeps the trailer from moving away from the dock during the loading process.

It is essential that lighting is bright enough to ensure the safe loading of a product and to help forklift operators see pedestrians. Lights mounted on forklifts aid entry into trailers and ease operations on ramps or in remote areas. Heat strips or climate curtains can help control temperature throughout the building. Although pedestrians must use caution when passing through these to avoid forklift traffic.



To prevent slips, trips, and falls from happening, the walkways, stairs, and walking surfaces of ramps and dock plates should be coated with a non-skid paint. Also mark all walkways with yellow lines to control traffic. Be aware of sharp drops or uneven ground such as a cargo loading areas and try to eliminate these drop points in docking areas by using mechanical substitutions such as tailgate loaders in trucks or ramps that store flat when not in use. Warning signs should be posted in these areas. Never jump from a dock; be careful not to step backward off docks; keep your mind and your eyes on what you are doing. Ramps and gang planks have hazards similar to loading docks. The slopes should be as gradual as possible, as wide as possible and as dry as possible.

Spills may affect how quickly powered equipment can stop and make walking surfaces very slick for pedestrians. Correct sources of leaks, and clean up an oil and grease spot immediately. Dock workers must also be aware of procedures to contain spills, be trained to recognize chemical hazards, and know what personal protective equipment (PPE) to wear when handling chemicals.

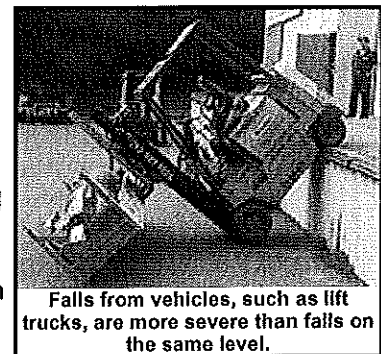
Safety awareness is not enough to reduce dock hazards. You must have systematic inspections and auditing, and you must have safeguards in place. Identify sources and types of injuries by reviewing past mishap reports. Management must take steps to organize product movement, control pedestrian traffic, and secure racking. Enforce compliance to all procedures. Plant safety is directly related to the enforcement of safety procedures. If you don't enforce it, it won't happen.

<< [back to top](#) >>

Powered Industrial Lifts

Lift trucks commonly leak oil and other fluids, which is a hazard for both walking and driving on the surface. Spills may affect how quickly powered equipment can stop and definitely make a slick walking surface for pedestrians. As mentioned in the [housekeeping](#) section, policies and procedures should be in place to prevent or minimize spills and leaks on walking and working surfaces.

An additional hazards associated with mechanized vehicles are falls. As is well known, falls from vehicles are less frequent than falls on the same level, however, when they do occur, they are more severe. For example, a common safety violation involving fork lifts is having more than one person (or catching a ride) on the vehicle. The rule here should be a definite "No Seat, No Rider." Death or serious injury is a frequent result of extra riders falling and or being run over by the lift. Another practice that is too often used is raising someone on a pallet or other platform to, say, change out light bulbs. This is not only an OSHA violation but is considered an "imminent danger" situation. There is a correct technique for this task and that is with an appropriate cage attached to the mast and a guard rail 42 inches, give or take three inches, and the person in the cage is tethered to the unit.



ROLL-OVERS: Methods or means to prevent mishaps and to protect employees from injuries vary considerably for different types of equipment. For example, operators of sit-down rider trucks are often injured (fatally) in roll overs when they attempt to jump clear of the equipment as it tips over. Because this occurs very fast and the natural tendency of the operator to jump downward, the operator normally lands below the equipment and is crushed by the vehicle or the vehicle's over-head guard. Therefore, operators of sit-down rider trucks need to be trained to remain in the vehicle and lean opposite the direction of the roll. Conversely, when a stand-up rider truck tips over, the operator can merely step back and perpendicular to the direction of the roll to avoid contact with the equipment. In this situation, the operator should be trained accordingly.

OSHA Federal Registers 63:66237-66274

www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=13870&p_text_version=FALSE

SEAT BELTS: When falls are discussed, one cannot avoid mentioning the use of seat belts on mobile powered vehicles. The rule is, if your forklift is equipped with a seat belt, it must be worn. OSHA, for instance, enforces the use of existing seat belts under the Section 5a, of the General Duty Clause. But, this should be expected since the practice would be no different than disabling a safety guard on a table saw. A more frequent question and concern is: What if the particular vehicle never came with a seat belt or similar restraint device? The answer is: Has the manufacturer of the particular equipment offered an operator restraint system or seatbelt retrofit program? Secondly, has the employer taken the initiative (documented) to take advantage of this program? Otherwise, no excuse.

OSHA Standard Interpretation

www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=22277&p_text_version=FALSE

PERSONAL FALL ARREST SYSTEMS: Any time there is a potential for a worker to fall more than four feet or if the work area is elevated and not properly guarded, fall arresting systems must be used. A classic example here is an order picker truck that elevates the operator on a platform that normally does not have enclosed railings, toe boards, or other similar fall protection devices. Here the operator must wear a personal fall arrest system such as a body harness or lanyard attached to the mast of the vehicle or overhead guard. A word of caution: Of all the restraining devices available and as recognized by both OSHA and ANSI, the full-body harness is the most preferred. This particular piece of equipment distributes the impact shock of a fall over the shoulders, thighs, and buttocks. This is extremely important in that it permits prolonged suspension without restriction of blood flow, thereby, preventing internal injuries, and keeps the victim in an upright position, making it easier for rescuers.

